Regularization/GLM (Q6L7)

Total Questions: 21

Most Correct Answers: **#8**

Least Correct Answers: **#16**

1. Overdispersion in Poisson Regression occurs when

2/10 A var(Y|X)>var(Y)

5/10 B var(Y|X)>mean(Y|X)

1/10 C Variance is decreasing

0/10 D I do not know

2. Which one of these is the measure for goodness of fit for Poisson Regression?

0/10 A Ordinal R^2

7/10 B Chi-square & Pseudo R^2

1/10 C I do not know

0/10 D There are not measure for it

3. Which one of these is the correct interpretation of the coefficient of Poisson Regression?

1/10 A For a 1-unit increase in X, we expect a b1 unit increase in Y.

6/10 B For a 1-unit increase in X, we expect b1 percentage increase in Y.

1/10 C For a 1-percentage increase in X, we expect b1 percentage increase in Y.

0/10 D For a 1-percentage increase in X, we expect b1 unit increase in Y.

0/10 E I do not know

4. In Poisson regression...

3/10 A The asymptotic distribution of the maximum likelihood estimates is multivariate normal.

0/10 B The distribution of the maximum likelihood estimates is multivariate normal.

4/10 C The asymptotic distribution of the maximum likelihood estimates is multivariate Poisson distribution.

1/10 D I do not know

5. Pseudo R-Squared Measures are calculated based on...

4/10 (A) The likelihood function

4/10 (B) Chi-squared value

1/10 (C) I do not know

0/10 (D) Overdispersion term

6. In the case of intercept-only model

2/10 (A) The mean of the dependent variable equals the exponential value of intercept

6/10 (B) The mean of the dependent variable equals the intercept

1/10 (C) The mean of the dependent variable equals 0

0/10 (D) I do not know

7. ln(lambda) = 0.6 - 0.2* female [lamda = the average number of articles] Note: e^(-0.2)=0.78

3/10 (A) One unit increase in female brings a 0.2 decrease in ln(lambda).

3/10 (B) Being female decreases the average number of articles by 0.78 percent

3/10 (C) Being female decreases the average number of articles by 22%

0/10 (D) I do not know

8. While running the Poisson Regression we will have never faced with the value of lambda

7/10 (A) 0

1/10 (B) 1

0/10 (C) 2

1/10 (D) I do not know

9. Why does not quasi-Poisson model have AIC?

5/10 (A) Quasi-Poisson is used quasi-likelihood instead of log-likelihood estimates.

3/10 (B) Quasi-Poisson does not use iterative estimation

1/10 (C) I do not know

10. **Why Poisson regression is called log-linear?**

5/10 (A) Because we use a log link to estimate the logarithm of the average value of the dependent variable

1/10 (B) Because we use a log values of independent variable

1/10 (C) Because we use a log value of an independent variable is transformed to linear

1/10 (D) I do not know

11. **In the multiple linear regression, we assume that...**

4/10 (A) The number of observations is much larger than the number of variables (n>>p)

2/10 (B) The number of observations is slightly larger than the number of variables (n>p)

1/10 (C) The number of observations equals than the number of variables (n=p)

0/10 (D) The number of observations is lees than the number of variables (n<p)

1/10 (E) It is not important

0/10 (F) I do not know

12. **The way of solving the problem of a large number of variables is...**

3/10 (A) Subset Selection & Shrinkage (Regularization)

2/10 (B) Shrinkage (Regularization) & Maximum Likelihood estimation

2/10 (C) Dimension Reduction & OLS estimation

1/10 (D) I do not know

1/10 (E) The absence of the right answer

13. **The bias of an estimator (e.g. z^) equals...Hint: the OLS coefficients are unbias :)**

3/10 (A) E(z^) - z

3/10 (B) E(z^2) - [E(z)]^2

0/10 (C) [E(z^2) - E(z)]^2

0/10 (D) E(z^2)

3/10 (E) I do not know

14. Which of following is not a type of regularization:

0/10 A L1 - Lasso

0/10 B L2 - Ridge

0/10 C Elastic Net

5/10 D L3 - Passo

4/10 E I do not know

15. The main idea of regularization is

2/10 A To introduce a small amount of bias in order to have less variance.

1/10 B To introduce a small amount of variance in order to have less bias.

2/10 C To introduce a small amount of variance and bias in order to have less bias.

3/10 D I do not know

16. With which function we can show regularization in R

1/10 A glmnet()

5/10 B regular()

0/10 C lm()

3/10 D glm()

0/10 E I do not know

17. How the tune of any parametr can be made

3/10 A using Cross validation

1/10 B It is impossible

2/10 C I do not now

2/10 D using larger sample

0/10 E only having population

18. **Elastic Net is**

5/10 (A) the combination of L1 and L2 regularization

0/10 (B) the combination of L2 and L3 regularization

0/10 (C) is independent from other types of refularization

3/10 (D) I do not know

0/10 (E) not a type of regularization

19. **Regularization is used only for**

1/10 (A) Poisson Regression

1/10 (B) Linear Regression

0/10 (C) Logistic Regression

4/10 (D) any regression

1/10 (E) I do not know

20. **Regularization can solve the problem of**

1/10 (A) heteroscedasticity

2/10 (B) multicollinearity

4/10 (C) autocorrelation

2/10 (D) I do not know

21. **Multicollinearity occurs when**

3/10 (A) rank(X)<m (m is the number of explanatory variables)

1/10 (B) $var(\varepsilon)=\sigma^2 I$

0/10 (C) $E(\varepsilon)=0$

1/10 (D) $cov(\varepsilon i,\varepsilon j)=const$

4/10 (E) I do not know